

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Canceled)

Claim 2 (Currently Amended): A ~~computer system~~ for finding a path for electrically conductive traces to be routed within a routing space comprising:

means for creating an initial array of nodes within ~~the~~ a routing space;

adjusting means for adjusting said initial array of nodes, including adjusting nodes between at least a pair of obstacles in said routing space; and

means for selecting a path through said adjusted array of nodes.

Claim 3 (Currently Amended): The ~~computer system~~ of claim 2, wherein said adjusting means comprises:

determining means for determining a number of paths that may pass between said pair of obstacles; and

means for adjusting a number of nodes between said pair of obstacles to be equal to said number of paths.

Claim 4 (Currently Amended): The ~~computer system~~ of claim 3, wherein said determining means determines a number of paths that may pass between said pair of obstacles determines a number of paths that may cross a line segment between said pair of obstacles.

Claim 5 (Currently Amended): The ~~computer system~~ of claim 2, wherein said adjusting means adjusts a number of nodes along a line segment between said pair of obstacles to be equal to a number of permissible paths between said pair of obstacles.

Claim 6 (Currently Amended): The ~~computer system~~ of claim 2, wherein said adjusting means adjusts locations of said nodes located between said pair of obstacles.

Claim 7 (Currently Amended): The computer system of claim 6, wherein said adjusting means further positions said nodes located between said pair of obstacles to correspond to permissible locations of paths between said obstacles.

Claim 8 (Currently Amended): The computer system of claim 2, wherein said adjusting means adjusts a location of each of at least one of said nodes in accordance with a proximity of said node to an object in said routing space.

Claim 9 (Currently Amended): The computer system of claim 2 further comprising linking means for linking said adjusted initial array of nodes.

Claim 10 (Currently Amended): The computer system of claim 9, wherein said linking means creates a link between each node in said array and nodes within a predetermined proximity of said each node without crossing any of said links.

Claim 11 (Currently Amended): The computer system of claim 10, wherein said path traverses ones of said links.

Claim 12 (Currently Amended): A system for finding a path for electrically conductive traces to be routed within a routing space computer comprising:

providing means for providing an array of linked nodes within said routing space, said array including a source node, a destination node, and a plurality of intermediate nodes; and

determining means for determining a path from said source node to said destination node through said linked nodes, wherein said means for determining means comprises:

creating means for iteratively creating a plurality of partial paths, each said partial path extending to an intermediate node in said array;

means for determining a routing cost of each said partial path; and
means for discarding all of said partial paths that extend to one intermediate node except the partial path with the lowest routing cost if more than one partial path extends to said one intermediate node.

Claim 13 (Currently Amended): The ~~computer~~ system of claim 12, wherein said ~~creating~~ means for iteratively creating a plurality of partial paths creates a plurality of partial paths by creating initial paths from said source node to first nodes linked to said source node.

Claim 14 (Currently Amended): The ~~computer~~ system of claim 13, wherein said ~~creating~~ means for iteratively creating a plurality of partial paths creates a plurality of partial paths further by extending said initial paths from said first nodes to nodes linked to said first nodes.

Claim 15 (Currently Amended): The ~~computer~~ system of claim 12, wherein said ~~providing~~ means for providing further comprises means, for each node in said array, for creating a link between said each node and nodes within a predetermined proximity of said each node without crossing any of said links.

Claim 16 (Currently Amended): The ~~computer~~ system of claim 12, wherein said ~~providing~~ means for providing further comprises means, for each node in said array, for creating shortest links between said each node and nodes within a predetermined proximity of said each node without crossing any of said links.

Claim 17 (Currently Amended): The ~~computer~~ system of claim 12, wherein said ~~providing~~ means for providing further comprises:

means for selecting one of said nodes of said array;

means for creating a link to another node of said array that is within a predetermined distance of said selected node; and

means for deleting, if said created link crosses another link, ~~deletes a longest~~ of said crossed links.

Claim 18 (Currently Amended): A ~~computer~~ system comprising:

creating means for creating an initial array of nodes within a routing space;

adjusting means for adjusting said initial array of nodes, including adjusting a location of each of at least one of said nodes in accordance with a proximity of said node to an object in said

routing space; and

selecting means for selecting a path through said adjusted array of nodes.

Claim 19 (Currently Amended): The computer system of claim 18, wherein said adjusting means for adjusting further comprises:

means for applying a force to said node, wherein a magnitude of said force corresponds to said proximity of said node to an obstacle; and

means for moving said node in accordance with said force.

Claim 20 (Currently Amended): The computer system of claim 18, wherein said adjusting means further comprises means for adjusting a location of each of at least one of said nodes in accordance with a proximity of said node to a plurality of said objects in said routing space.

Claim 21 (Currently Amended): The computer system of claim 20, wherein said adjusting means for adjusting a location of each of at least one of said nodes further comprises:

means for applying a plurality of forces to said node, wherein a magnitude of each of said plurality of forces corresponds to said proximity of said node to one of said plurality of obstacles; and

means for moving said node in accordance with a sum of said plurality of forces.

Claim 22 (Currently Amended): A computer program product, for use in conjunction with a computer system, the computer program product ~~readable-media comprising software for causing said computer to perform a method for finding a path within a routing space from a start location to an end location, said method comprising:~~

instructions for creating an initial array of nodes within said routing space;

instructions for adjusting said initial array of nodes, including adjusting nodes between at least a pair of obstacles in said routing space; and

instructions for selecting said path through said adjusted array of nodes.

Claim 23 (Currently Amended): The media-computer program product of claim 22, wherein said ~~step of~~ instructions for adjusting nodes between at least a pair of obstacles comprises:

instructions for determining a number of paths that may pass between said pair of obstacles; and

instructions for adjusting a number of nodes between said pair of obstacles to be equal to said number of paths.

Claim 24 (Currently Amended): The media-computer program product of claim 23, wherein said ~~step-of~~instructions for determining a number of paths that may pass between said pair of obstacles comprises instructions for determining a number of paths that may cross a line segment between said pair of obstacles.

Claim 25 (Currently Amended): The media-computer program product of claim 24, wherein said ~~step-of~~instructions for adjusting a number of nodes located between said pair of obstacles to be equal to said number of paths comprises instructions for adjusting nodes along said line segment to be equal to said number of paths.

Claim 26 (Currently Amended): The media-computer program product of claim 22, wherein said ~~step-of~~instructions for adjusting said initial array of nodes further comprises instructions for adjusting locations of said nodes located between said pair of obstacles.

Claim 27 (Currently Amended): The media-computer program product of claim 26, wherein said ~~step-of~~instructions for adjusting locations of said nodes located between said pair of obstacles comprises instructions for positioning said nodes located between said pair of obstacles to correspond to permissible locations of paths between said obstacles.

Claim 28 (Currently Amended): The media-computer program product of claim 22, wherein said ~~step-of~~instructions for adjusting said initial array of nodes further comprises instructions for adjusting a location of each of at least one of said nodes in accordance with a proximity of said node to an object in said routing space.

Claim 29 (Currently Amended): The media-computer program product of claim 22 further comprising instructions for linking said adjusted initial array of nodes.

Claim 30 (Currently Amended): The ~~media-computer program product~~ of claim 29, wherein said ~~step-of-instructions for~~ linking said adjusted initial array of nodes comprises instructions for creating a link between each node in said array of nodes within a predetermined proximity of said each node without crossing any of said links.

Claim 31 (Currently Amended): The ~~media-computer program product~~ of claim 29, wherein said path traverses ones of said links.

Claim 32 (Currently Amended): A computer-readable media, for use in conjunction with a computer, comprising ~~software-instructions~~ for causing said computer to perform a method for finding a path within a routing space from a start location to an end location, ~~said method~~ comprising:

instructions for providing an array of linked nodes within said routing space, said array including a source node corresponding to said start location, a destination node corresponding to said end location, and a plurality of intermediate nodes; and

instructions for determining a path from said source node to said destination node through said linked nodes,

wherein said ~~step-of-instructions for~~ determining a path from said source node to said destination node comprises:

instructions for iteratively creating a plurality of partial paths, each said partial path extending to an intermediate node in said array;

instructions for determining a routing cost of each said partial path; and

instructions for, if more than one partial path extends to one intermediate node, discarding all of said partial paths that extend to said one intermediate node except the partial path with the lowest routing cost.

Claim 33 (Currently Amended): The media of claim 32, wherein said ~~step-of-instructions for~~ iteratively creating a plurality of partial paths comprises instructions for creating initial paths from said source node to first nodes linked to said source node.

Claim 34 (Currently Amended): The media of claim 32, wherein said ~~step of~~ instructions for iteratively creating a plurality of partial paths further comprises instructions for extending said initial paths from said first nodes to nodes linked to said first nodes.

Claim 35 (Currently Amended): The media of claim 32, wherein said ~~step of~~ instructions for providing an array of linked nodes comprises, for each node in said array, instructions for creating a link between said each node and nodes within a predetermined proximity of said each node without crossing any of said links.

Claim 36 (Currently Amended): The media of claim 32, wherein said ~~step of~~ instructions for providing an array of linked nodes comprises, for each node in said array, instructions for creating shortest links between said each node and nodes within a predetermined proximity of said each node without crossing any of said links.

Claim 37 (Currently Amended): The media of claim 32, wherein said ~~step of~~ instructions for providing an array of linked nodes comprises:
instructions for selecting one of said nodes of said array;
instructions for creating a link to another node of said array that is within a predetermined distance of said selected node; and
instructions for if said created link crosses another link, deleting a longest of said crossed links.

Claim 38 (Currently Amended): The media of claim 32, wherein said ~~step of~~ instructions for determining a routing cost of each said partial path comprises instructions for estimating a length of a path from said source node to said destination node through the intermediate node to which said partial path extends.

Claim 39 (Currently Amended): A computer-readable media comprising software instructions for causing said a computer to ~~perform a method for~~ finding a path within a routing space from a start location to an end location, ~~said method~~ comprising:
instructions for creating an initial array of nodes within said routing space;

instructions for adjusting said initial array of nodes, including adjusting a location of each of at least one of said nodes in accordance with a proximity of said node to an object in said routing space; and

instructions for selecting said path through said adjusted array of nodes.

Claim 40 (Currently Amended): The media of claim 39, wherein said instructions for ~~step of~~ adjusting said initial array of nodes further comprises:

instructions for applying a force to said node, wherein a magnitude of said force corresponds to said proximity of said node to said obstacles; and

instructions for moving said node in accordance with said force.

Claim 41 (Currently Amended): The media of claim 39, wherein said instructions for ~~step of~~ adjusting said initial array of nodes further comprises instructions for adjusting a location of each of at least one of said nodes in accordance with a proximity of said node to a plurality of said objects in said routing space.

Claim 42 (Currently Amended): The media of claim 41, wherein said instructions for ~~step of~~ adjusting a location of each of at least one of said nodes in accordance with a proximity of said node to a plurality of obstacles comprises:

instructions for applying a plurality of forces to said node, wherein a magnitude of each of said plurality of forces corresponds to said proximity of said node to one of said plurality of obstacles; and

instructions for moving said node in accordance with a sum of said plurality of forces.

Claim 43 (Currently Amended): The computer system of claim 2, wherein said path corresponds to a path for a trace or wiring in an electronics system.

Claim 44 (Currently Amended): The computer system of claim 2, wherein said path is stored within said computer system.

Claim 45 (Currently Amended): The computer system of claim 12, wherein said path

corresponds to a path for a trace or wiring in an electronics system.

Claim 46 (Currently Amended): The ~~computer~~ system of claim 12, wherein said path is stored within said ~~computer~~ system.

Claim 47 (Currently Amended): The ~~computer~~ system of claim 18, wherein said path corresponds to a path for a trace or wiring in an electronics system.

Claim 48 (Currently Amended): The ~~computer~~ system of claim 18, wherein said path is stored within said ~~computer~~ system.

Claim 49 (Currently Amended): The computer program product of claim 22, wherein said path corresponds to a path for a trace or wiring in an electronics system.

Claim 50 (Currently Amended): The computer program product of claim 22, wherein said path is stored within said computer.

Claim 51 (Currently Amended): The computer-readable media of claim 32, wherein said path corresponds to a path for a trace or wiring in an electronics system.

Claim 52 (Currently Amended): The computer-readable media of claim 32, wherein said path is stored within said computer.

Claim 53 (Currently Amended): The computer-readable media of claim 39, wherein said path corresponds to a path for a trace or wiring in an electronics system.

Claim 54 (Currently Amended): The computer-readable media of claim 39, wherein said path is stored within said computer.

Claim 55 (New): The system of claim 2, wherein said means for creating an initial array of nodes creates the initial array of nodes in a honeycombed pattern.

Claim 56 (New): The system of claim 2, wherein said means for creating an initial array of nodes creates the initial array of nodes wherein a random location of at least one node is generated.

Claim 57 (New): The system of claim 18, wherein said means for creating comprises means for selecting spacings of the initial array of nodes to form a honeycombed pattern.

Claim 58 (New): The system of claim 18, wherein said means for creating comprises means for generating a random location for at least one node.

Claim 59 (New): The computer program product of claim 22, wherein said instructions for creating an initial array of nodes comprises instructions for selecting spacings of the initial array of nodes to form a honeycombed pattern.

Claim 60 (New): The computer program product of claim 22, wherein said instructions for creating an initial array of nodes comprises generating a random location for at least one node.

Claim 61 (New): The computer-readable media of claim 39, wherein said instructions for creating an initial array of nodes comprises instructions for selecting spacings of the initial array of nodes to form a honeycombed pattern.

Claim 62 (New): The computer-readable media of claim 39, wherein said instructions for creating an initial array of nodes comprises generating a random location for at least one node.